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James Sammons

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EXAMINER

KLEIN, GABRIEL J

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/536,468	<b>Applicant(s)</b> SAMMONS ET AL.	
	<b>Examiner</b> Gabriel J. Klein	<b>Art Unit</b> 3641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 March 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 73-85 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 73-85 is/are rejected.
- 7) ☒ Claim(s) 75,76,79 and 84 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/27/2006</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Objections***

Claim 75 is objected to because of the following informalities: On line 1 it states: "...said cutting sheet linear component..."

There is insufficient antecedent basis for this limitation in the claims. However, it is the opinion of the Office that Applicant has simply made a typographical error and that Applicant intended to state: "...said cutting sheet liner component..."

For purposes of examination the Office will consider the claim as stating: "...said cutting sheet liner component..." Appropriate correction is required.

Claim 76 is objected to because of the following informalities: There is a missing term "a" between the semicolon and the term "shape" in line 2. Appropriate correction is required.

Claim 79 is objected to because of the following informalities: Claim 79, which depends from claim 77, claims that the inert compound comprises barium sulfate. However, claim 77 does not claim an inert compound, but claim 78 does claim said inert compound. Therefore, it is the opinion of the Office that Applicant has made a typographical error, and that claim 79 should actually depend from claim 78. Appropriate correction is required.

Claim 84 is objected to because of the following informalities: Claim 84 depends from itself. Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 73-74, 76, 80, and 82 are rejected under 35 U.S.C. 102(b) as being anticipated by Dadley et al (4693181).

In reference to claim 73, Dadley et al discloses a flexible linear charge element adapted to the penetration of a structure, said linear charge element forming an elongate composite structure; said composite structure including:

- a shaped explosive charge component (figure 3, element 1);
- a cutting sheet liner component (figure 3, element 5); and
- a stand-off member component (figure 3, element 17), and wherein each said component is at least partially enveloped in an inertial mass tamping carapace (figure 3, element 11).

In reference to claim 74, Dadley et al discloses that said cutting sheet liner component is disposed between said shaped explosive charge component and said stand-off member component (figure 3).

In reference to claim 76, Dadley et al discloses that said explosive charge component is a shaped charge component; the shape of said shaped charge component adapted to produce a "Monroe Effect" when detonated (figure 3; and column 1).

In reference to claim 80, Dadley et al discloses that said stand-off member component is adapted to provide a separation between said cutting sheet liner and said structure (figure 3).

In reference to claim 82, Dadley et al discloses that said stand-off member component is in the form of an elongate flexible hollow tubular member (column 3, lines 13).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 75 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dadley et al in view of Nielson et al (6962634).

Dadley et al discloses the claimed invention except for wherein said cutting sheet liner component comprises a matrix of polymers incorporating a dense distribution of metal carbide particles. Nielson et al teaches that it is known to use a cutting sheet liner component comprising a matrix of polymers incorporating a dense distribution of metal carbide particles (column 3, lines 25-40; column 7, lines 17-23) to provide a reactive liner for a shaped charge that has increased penetrative capabilities over conventional metal liners. It would have been obvious to one having ordinary skill in the art to substitute the liner taught by Dadley et al with the reactive liner as taught by Nielson et al to provide the linear cutting charge with increased penetrative capabilities (for cutting

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through armor), and since it would merely constitute a substitution of equivalent structures in an analogous art setting. Further, a person of ordinary skill in the art could carry out such a substitution using known methods in a manner that would yield predictable results.

Claim 81 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dadley et al. Dadley et al teaches the claimed invention including wherein said stand-off member component is in the form of an elongate flexible foam structure (figure 3, element 17; and column 2, last paragraph which discloses that said groove filling portion can be constructed out of expanded polyethylene). Dadley et al does not explicitly state that said expanded polyethylene (foam) is closed cell. However, it would have been an obvious matter of design choice to a person of ordinary skill in the art to make the stand-off member component as taught by Dadley et al out of closed cell foam (expanded polyethylene), because Applicant has not disclosed that closed cell foam provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with the expanded polyethylene stand-off member component as taught by Dadley et al, because it prevents the influx of dense material into the groove of the linear cutting charge thereby ensuring optimum cutting efficiency, and since it appears to be an arbitrary design consideration which fails to patentably distinguish over Dadley et al. Therefore, it would have been an obvious matter of design choice to modify Dadley et al to obtain the invention as specified in the claim(s).

Assuming arguendo that element 11 of Dadley et al is not an inertial mass tamping carapace then it should be appreciated that the following rejection can be made as well.

Claims 73-74, 76-78, 80, 82-85 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dadley et al in view of Backofen, Jr. et al.

Dadley et al discloses the claimed invention except does not expressly state that the casing (element 11) is an inertial mass tamping carapace. Backofen, Jr. et al teaches that it is known to provide an inertial mass tamping carapace (figure 3, element 40'; and column 6, lines 16-22) to contain the detonation products and energy of a linear charge element so as to substantially reduce or almost completely eliminate side and end losses thereby enabling the detonation energy to be efficiently concentrated on the surface to be penetrated. Further, it should be appreciated that Backofen, Jr. et al teaches that said inertial mass tamping carapace has edge surfaces (figure 3, element 56) that can be used for mounting to a surface using adhesives, mechanical straps, or the like. It would have been obvious to one having ordinary skill in the art to substitute the outer casing (figure 3, element 16) as taught by Dadley et al with the inertial mass tamping carapace as taught by Backofen Jr. et al to more efficiently contain the detonation products and energy of the linear charge element so as to substantially reduce or almost completely eliminate side and end losses thereby enabling the detonation energy to be more efficiently concentrated on the surface to be penetrated. Further, a person of ordinary skill in the art would be able to make such a substitution using known methods in a manner that would yield predictable results. This is

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supported by the fact that Backofen Jr. et al plainly states that the inertial mass tamping carapace can be applied to linear shaped charges (column 6, lines 16-22), and by the fact that Dadley et al teaches a linear shaped charge. I

In reference to claim 74, Dadley et al in view of Backofen, Jr. et al teaches that said cutting sheet liner component is disposed between said shaped explosive charge component and said stand-off member component.

In reference to claim 76, Dadley et al in view of Backofen, Jr. et al teaches that said explosive charge component is a shaped charge component; a shape of said shaped charge component adapted to produce a "Monroe Effect" when detonated.

In reference to claim 77, Dadley et al in view of Backofen, Jr. et al teaches that said inertial mass tamping carapace is formed of a dense non-toxic, flexible plasticized metal composite (Backofen, Jr et al: column 5, lines 66-68, to column 6, lines 1-15).

In reference to claim 78, Dadley et al in view of Backofen, Jr. et al teaches that said inertial mass tamping carapace is formed of a dense inert compound (column 3, lines 31-65; and column 5, lines 66-68, to column 6, lines 1-15).

In reference to claim 80, Dadley et al in view of Backofen, Jr. et al teaches that said stand-off member component is adapted to provide a separation between said cutting sheet liner and said structure (Dadley et al: figure 3).

In reference to claim 82, Dadley et al in view of Backofen, Jr. et al teaches that said stand-off member component is in the form of an elongate flexible hollow tubular member (Dadley et al: column 3, lines 13).



In reference to claim 83, Dadley et al in view of Backofen, Jr. et al teaches that said composite structure is provided with attachment means adapted to attach said linear charge element to a surface of said structure (Backofen, Jr. et al: column 4, lines 31-35).

In reference to claims 84-85, Dadley et al in view of Backofen, Jr. et al teaches the claimed invention except for wherein said attachment means comprises at least one adhesive or magnetic strip. The examiner asserts that it is well within the knowledge of a person having ordinary skill in the art to use at least one adhesive or magnetic strip to attach a linear charge element to a surface. Thus, it would have been obvious to one having ordinary skill in the art to provide the flexible linear charge element as taught by Dadley et al in view of Backofen, Jr. et al with at least one adhesive or magnetic strip in order to attach said linear charge element to a surface, and since Dadley et al in view of Backofen, Jr. et al teaches that said linear charge element is provided with attachment means adapted to attach said linear charge element to a surface (Backofen, Jr. et al: column 4, lines 31-35). Further, the examiner takes Official Notice that a person of ordinary skill in the art would be motivated to use either an adhesive or magnetic strip as said attachment means since Dadley et al in view of Backofen, Jr. et al teaches that said attachment means can be an adhesive, a mechanical strap, or the like, and since an adhesive or magnetic strip is a known attachment device of this type.

Claim 75 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dadley et al in view of Backofen, Jr. et al and further in view of Nielson et al (6962634).

Dadley et al in view of Backofen, Jr. et al discloses the claimed invention except for wherein said cutting sheet liner component comprises a matrix of polymers incorporating a dense distribution of metal carbide particles. Nielson et al teaches that it is known to use a cutting sheet liner component comprising a matrix of polymers incorporating a dense distribution of metal carbide particles (column 3, lines 25-40; column 7, lines 17-23) to provide a reactive liner for a shaped charge that has increased penetrative capabilities over conventional metal liners. It would have been obvious to one having ordinary skill in the art to substitute the liner taught by Dadley et al in view of Backofen, Jr. et al with the reactive liner as taught by Nielson et al to provide the linear cutting charge with increased penetrative capabilities (for cutting through armor), and since it would merely constitute a substitution of equivalent structures in an analogous art setting. Further, a person of ordinary skill in the art could carry out such a substitution using known methods in a manner that would yield predictable results.

Claim 81 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dadley et al in view of Backofen, Jr. et al.

Dadley et al in view of Backofen, Jr. et al teaches the claimed invention including wherein said stand-off member component is in the form of an elongate flexible foam structure (figure 3, element 17; and column 2, last paragraph which discloses that said groove filling portion can be constructed out of expanded polyethylene). Dadley et al in view of Backofen, Jr. et al does not explicitly state that said expanded polyethylene (foam) is closed cell. However, it would have been an obvious matter of design choice to a person of ordinary skill in the art to make the stand-off member component as

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taught by Dadley et al in view of Backofen, Jr. et al out of closed cell foam (expanded polyethylene), because Applicant has not disclosed that closed cell foam provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with the expanded polyethylene stand-off member component as taught by Dadley et al in view of Backofen, Jr. et al, because it prevents the influx of dense material into the groove of the linear cutting charge thereby ensuring optimum cutting efficiency, and since it appears to be an arbitrary design consideration which fails to patentably distinguish over Dadley et al in view of Backofen, Jr. et al. Therefore, it would have been an obvious matter of design choice to modify Dadley et al in view of Backofen, Jr. et al to obtain the invention as specified in the claim(s).

Claim 79 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dadley et al in view of Backofen, Jr. et al and further in view of Brown (3777663).

Dadley et al in view of Backofen, Jr. et al teaches the claimed invention except for wherein said inert compound comprises powdered barium sulphate. Brown teaches that it is known to incorporate powdered barium sulphate into a plastic shaped charge enclosure to increase the specific gravity of said plastic shaped charge enclosure (column 3, lines 40-49). It would have been obvious to one having ordinary skill in the art to modify the inertial mass tamping carapace as taught by Dadley et al in view of Backofen, Jr. et al to include powdered barium sulphate since it is known to use powdered barium sulphate to increase the specific gravity of a shaped charge enclosure, and since said inertial tamping mass carapace is a shaped charge enclosure

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that relies upon a high specific gravity to contain the detonation products of a linear shape charge to minimize losses. Further, since Applicant does not disclose that the use of powdered barium sulphate provides an advantage, is used for a particular purpose (as opposed to other powdered metals), or solves a stated problem, it should be appreciated that Applicant's use of powdered barium sulphate appears to be a mere design consideration.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gabriel J. Klein whose telephone number is 571-272-8229. The examiner can normally be reached on Monday through Friday 7:15 am to 3:45 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Carone can be reached on 571-272-6873. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

GJK

/Michael J. Carone/  
Supervisory Patent Examiner, Art Unit 3640